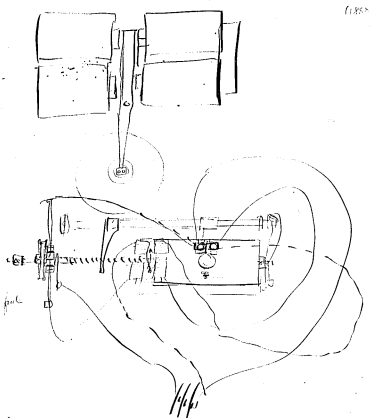
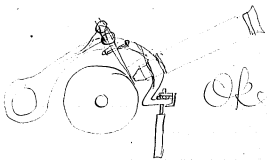
UNBOUND NOTES AND DRAWINGS
UNDATED, CA. 1888



Kinetoscope Top View

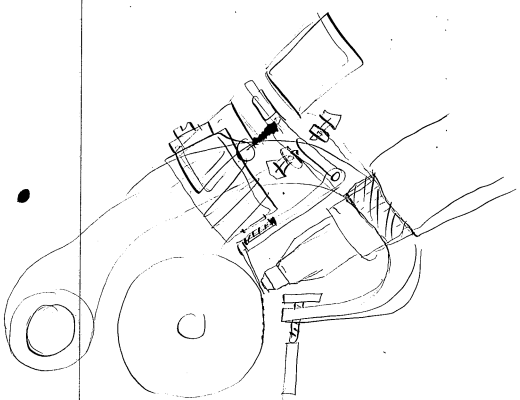


Kinetoscope

Motion picture

11

2



$$
\begin{array}{r}
32 \\
128 \\
1000 \\
1024 \\
128 \\
\hline
2800 \\
\hline
1200 \\
1200 \\
\hline
0
\end{array}
\qquad
\begin{array}{r}
140 \\
\hline
21 \overline{)} 2940 \\
21 \\
\hline
140 \\
126 \\
\hline
140 \\
126 \\
\hline
14
\end{array}
\qquad
\begin{array}{r}
(16 \\
\hline
(168 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
15 \overline{)} 2800 \\
\hline
(186 \\
\hline
40
\end{array}
\qquad
\begin{array}{r}
2800 \\
1200 \\
1600 \\
1200 \\
\hline
400
\end{array}
\qquad
\begin{array}{r}
60 \overline{)} 1680 \\
120 \\
\hline
480 \\
420 \\
\hline
60
\end{array}
\qquad
\begin{array}{r}
(28 \\
\hline
4
\end{array}
$$

$$
\begin{array}{r}
60 \overline{)} 2800 \\
240 \\
\hline
400 \\
360 \\
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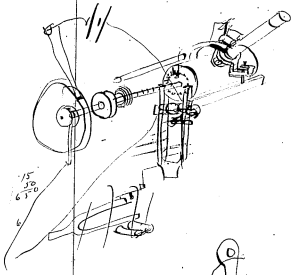
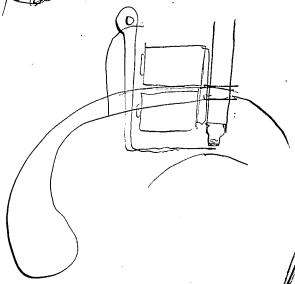
40
\end{array}
\qquad
(46
$$

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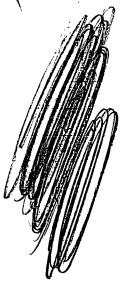
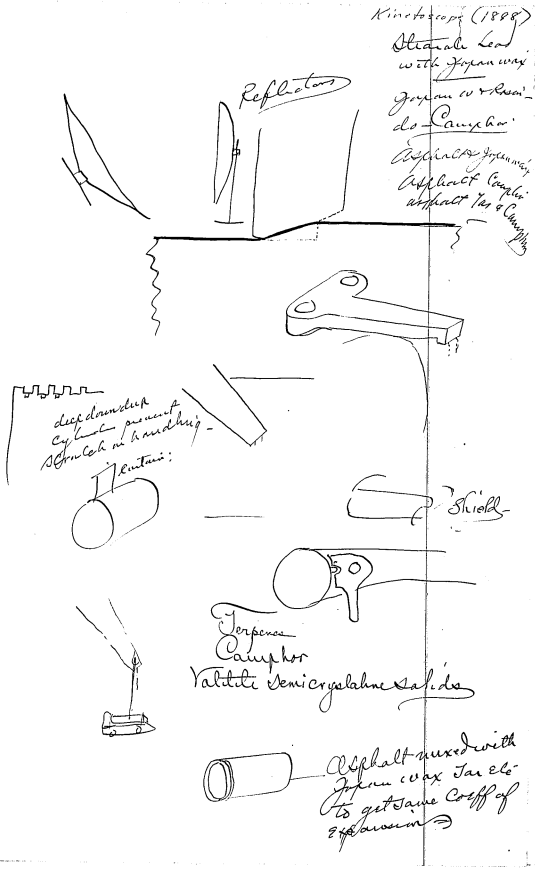



Kinetoscope (1894)
Reflectors
Shield
Terpenes
Camphor

Kennelly –

We use a great deal too much Copper on the field magnets of our Dynamos because we must keep down the heat We do not add the Copper for economy of Current but solely to prevent over heating –

Now I want a few experiments tried on winding Several spools all Exactly the same say ~~2 dia or~~ thus

Use the same size wire – say No 19 or 20 B.W.G. ~~Cotton~~ Covered –

~~Not~~ On No 1 use Simple Cotton

No 2 " drawn through hot Carnauba Wax – "

No 3. Drawn through hot shellac

No 4 – Hot ~~Mastic~~ asphalt ~~mix~~

No 5 – " " mixed with 10 pct of Linseed oil –

No 6. Drawn through Mastic gum Dammar with 5 percent of Linseed oil –

After all dry give each the same Energy per unit of rotation by dumper and make a Curve of rise of temperature from cold to 3 hours or to when they are constant.

Kennelly

arrange the armperes so that the Simple Caltan one will give 200 degrees in 3 hours but not higher - put them under protected Shades so all will have same Conditions.

We used brass wire for a binding wire around our armatures, it expands rather too much when armature gets hot + worse than this the foucault Currents in it is very great heating it up twice as high as the armature proper — I want to test the availability of Phosphor Bronze — Aluminum bronze + Nickel + Cobalt wire They should have a strength Equal to brass + have higher resistance — Piano steel will not answer as it rusts, possibly it could be plated with Ni or Co but it could be unsafe

E

I want to see if the lines of force in our big dynamo or one of the small ones when loaded up say with 200 or 300 lights oscillate very much, enough to throw foucault Currents in the iron piece of the field magnet, You Can probably ascertain this with a fixed wire over opening in field casting on Electrodynamometer —

Kennelly –

Have Clerk try & see if he can plate Copper Silver or any other metal on a film of Sulphide or Oxide of Copper

---

Make a magnet with Cores formed of Iron reduced by Hydrogen mixed with Paraffine or Ceresin I think. This kind of a magnet would always give the same deflection or strength with a definite Current & leave no residual & so it would be valuable for Indicating instruments –

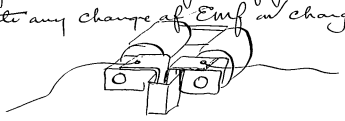
Get say 80 feet soft charcoal No 4 Iron (Lehigh was same as the long magnet) see if it will hold its charge if charged by a magnet without any coils around it – If not put its poles in contact with our 80 ft magnet & think this will charge it –

If that long magnet after charging gradually loses its charge the lines of force should cut the wire & if the same is connected to a very delicate Thomson it ought to show a a current for an hour or so –

Kennelly

Try Red Oxide of Copper in Lelande & Chapuis Cell with new Electrodes (16 grid - use only a little in each trough say 1 oz all together in place of the Copper salts —

Take a small cell say of Hard rubber (we have some) 1 inch wide 2 inch broad & 3 deep or near that polish two iron plates with Emery paper put them in Solution of Caustic Soda & put them between poles of powerful magnet note any change of EMF on charging magnet



Hard Rubber brush holder Rigging - Moulded by Burton Co

Commutator-segments 8 at time : 8 sets per day '64

3 Tooth cutting wire Special - between can be punched or drop forged at our Cambourne or Hyde Park Steers

Rubber brush, made at factory sized stock - Drilling - Tapping

1 Lathe -
1 small Drill press

governor arm

1 Drill press.

studs governor springs - etc

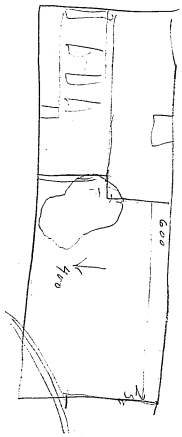
Top centre main shaft. " for achine turn

1 screw machine -

14. Hobbs Walls -

30 30

300
6# 21.000
360



Phenix -

Screw for phenix -	4 Roughing Lathes 15 Special Lathes.
Return screw.	1 screw machine
Driving wheel.	1 screw machine 1 Knearling machine -
Return screw driving wheel,	1 Screw machine.
Motor driving wheel	1 screw machine
guide shaft.	2 grinding machines 1 Lathe.
Frame phenix -	4 Drill presses 4 Milling machines
Spindle screw	2 Milling machines for keyway slot 3 Drill presses for drilling large hole & facing for spindle 1 Spotting machine under grinding screw -
Spindle.	6 Milling machines 2 Counter boring machines 1 Slotting machine 3 Drilling machines 1 Screw machine

Transmitter,	2 screw machines one for small screws punch press for draplingers + shear cutter for wire + small drift
~~Receiver~~,	
Receiver -	1 large screw machine 1 small for small screws 1 punch for rings 1 small drift -
Transmitter knife -	1 small punch press
Transmitter arm	1 drop forge one small drill press
Front on spectacle,	
Traversing screw on spectacle, spring centers - flat spring	1 screw machine 1 punch press
Traveling arm -	Large punch press 1 Drill press
Return screw arm - cast, Traveler —	1 punch press 1 screw machine or speed Lathe.
Arm carrying knuckle	1 Milling machine 1 Drill press -
Bush in Connecting Cast tube for spectacle + traveling arm	1 screw machine.
Jerking off knife -	1 Drop forge - or milling machine 1 sharpening wiggling 1 screw machine. 1 punch press
Straight Edge.	1 Milling machine - 1 Drill press

3 phase

9-9 Back arms.	3 Milling machines -
9-9 " Inside	3 Milling "
	2 Drill presses
	1 Screw machine -
Transmitter Tube -	1 Spinning machine
Receiver Tube Screw Room.	1 Screw machine -

Assembling Room 50 X 75 -

6 speed Lathes.
2 precision Lathes
1 Engine Lathe.
15 Vises -

Oxide Laboratory 25 X 50 - Reverberatory furnace,
Storage, 3 months output, say 10,000. complete,

Line shafting -

Toolmakers outfit 40 X 75 - 2 precision Lathe, 4 hollow spindle Engine Lathe, 2 small Bromwharp & Milgmac, 2 sensitive drill 1 large drill, 2 small Engine Lathes, 5 speed Lathes, 15 Vises, 4 outfits, one emery one tool grinder - 2 planers 1 planer small, 1 power shears - 1 grinellen Lathe, 1 Universal grinder -

Milling 8 at once 3 cuts hour 30 plungs daily per mine
6 Screw milling machines —
2 drill presses

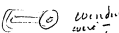
8 Cores per plung 1600 both ends 300 per screw mine
6 screw machines

4 per mach. 800 to be sawed off -
1 sawing off machine
1 drill press

16 per machine 3200 - 12 per min 600 per hour
one punch press -

Brace, one grinder drill press -
jig filled -

800
4 per mac. facing ends tapping -
3 screw machines —
for holes. 1 drill press
for milling. 4/6 hour 2 machines. 2 Milling Machines



1600.
5 power winding machines

Battery -

Grids - 2 large presses.
3 screw machines -
1 set Machinery for Cells

General

Casting flywheels 1 Large melting furnace -

1 polishing room wood wheels - 6 spindles -.

1 Japan Oven holding 300 complete machines -
1 plating Room, 4 Vats nickel.
1 Vat gold
3 dipping Vats.

Foundry. Capacity 2 ton daily.
Brass furnace two holes -
annealing furnace Blacksmith forge.
4 tool grinders Emery -
One canning room for Soda -
one Wax moulding room, with melters, for 25000 lbs 20000 - Cyl
250 moulds - 30 outside trimmers 40 inside trimmers

Drilling top plate.
2 multiple drill presses for holes.
2 for commutator bars

2 drill press multiple -

Motor shaft. 2 screw machines for roughing
1 lathe for turning -

Armatures and flywheel - 12 on machine 2400 - punched with holes -
1 punch press
1 drill press for commutator bars,

Brass Cup for Center Light. + Switch

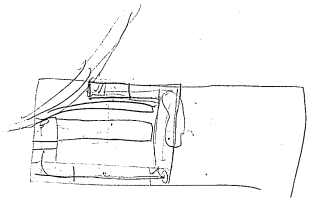
1 screw machine

plug.
Binding posts
Brush holder
& screw top

2 screw machines -

brush holder

1 punch press



60' 45' 7"

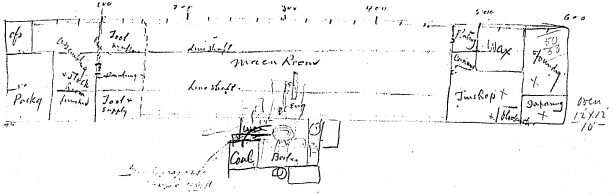
200 Yards

600 feet x 1 on

75 teeth

1350 feet walls.

45000 sqft roof



Oil tanks + steam - 100

Gas — 200

Window Curtains - 100

Steam pipes for heating 1000

Benching

Drawers

Water closet

Belting

Countershafting Strips -

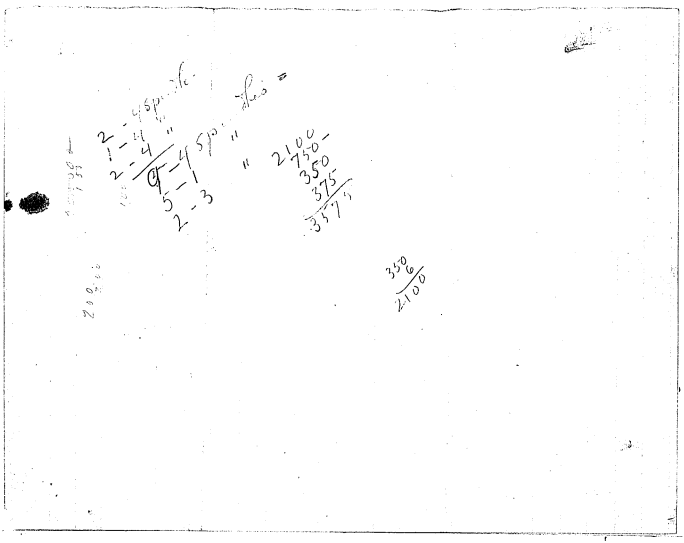
F

Supply drills, taps, reamers, files, Emery Wheels, paper etc etc.

In 4 small Bldgs at Lab

1000 feet walls with roof. Cost

$14000 - Roof. 10000 sqr ft



New phmograph factory. Capacity 200 daily with Duplexes make own brass & 2mm Castings.

150 hp Brown Engine.
250 Babcock Boiler.
— Barnum with brick.
1 Blower Engine - forced draft
1 ~~O to 5 Engine for No 20 for daylight~~
1 ~~No 20 Sturtevant with pressure and~~
Blowing wood or porcelain insulators.
Steam piping -
Stack -
Drip steam Trap -
Bldg 600 feet long 75 broad - one story - with boiler ~~Engine~~ house on one side & about middle -

Drill Press	6000	
Turning	11000	10,000
Milling	5600	
punch	4000	
Engine L	5600	
pressing Sp.	18000	
Sawing "	200	
Speed bottom	1100	
pressure full.	1400	
Vises	350	
Vertical	1400	
anvil	50	
Tool grinder	500	
Shaping	1500	
planer	700	
Universal	2400	
polishing	300	
Slotting Mach.	500	
[illegible]	400	
[illegible]	300	
Slotter	450	
Combination		
	45550	

33 200 6600 — 29 400 1160 — 14 400 560

28 300 5600

100 lb. iron 35 per foundry

Shafting + pulley	2000	heating	2500
Engineers bench	12,000	warming	1500
Dynamo	1500	Small tools	8000
belting 20 per mac	4500	Supplies for Jobbing	2000
	500		8925 0
Cupola	300		
Flasks, sand			
Vapor Furnace	800		
Ward Mercedes 100	800		
Benching & Speed Lathes	1400		
Wiring f 500 Lights	1000		
"	500		
"	300		
Shelving Stockroom	800		
Planetary Dynamo Tables	2500		
Fair Machinery Tables	800	75250	

75250

150 300 300

25 0 2 50 12 50 3 0 2 50

Cable Address "Edison, New York"

From the Laboratory
of
Thomas A. Edison.

Subject,_____ Orange, N.J.,_____ 188

5	office
6	pkg
2	Jodl
1	Steele Room
25	assembling
6	Testers
200	[illegible]
20	assembling + making Castings
10	Buffing
18	[illegible]
2	[illegible]
2	plates
8	Turning
4	Evaporators
4	tool [illegible]
1	Engine
4	Laborers
6	boys
20	
343 3/9	
3087	

1200
627
00

627
1200
125400
627
752400

Plain Mills — "

Patterns,

Parts

		Iron Pinions	Cast Iron	Steel Arms	Brass & Pinions	Finishing Mills	Iron Cut Pinions	Finishing Mills	Steel
200	Retaining Screws	1/2	1						
200	" " Wheels	1/4							
200	" " Centre	1/4							
200	Parallel Rules	-							
200	100 Thread Stops		10-16			4			
200	Bevel Wheels	1/4	1						
200	Brass Cylinders	-				8			1
200	Back Rods					12			
200	" Slides	1/4							
400	Bushes for "	1/4							
200	Dust Arms				1/4				
200	" " Studs				1/4				
200	Nuts 100 Thread	1/2	1						
200	Retaining Screw Punchings				1/4				
200	Shoulder Screws	1/4							
200	" " Spring Washers				1/8				
400	Stops for retaining screw finishing								1
200	Sprocket Arms			1-4					
200	Pinning Tools				1/8				
200	" " Adjusting Screws	1/2							
200	Adjusting Screws	1/2							
200	Spindles			1-1					
200	" Stops Guide Pins	1/4							
200	" " Springs								1
200	" Studs	1/2							
200	" Handles	1/2							
200	" Spring Washers				1/8				
200	" Bottle Screws	1/4							
400	" Adjusting "	1							
400	" Pinions				1/8				
200	Big Book Arms (castings)			1-3					
200	Brass Scales				1/8				
200	Keys for Big Book			1/2-3					
200	Studs holding scale arms	1/4							
200	Washers for same				1/8				
400	Steel Pin Stops								1
200	Springs holding Key								1
					2 1/2	24			

Phono. Cont.									
200	Springs holding down bar								1
200	Shoulder Screws for Lift Rod	1/8							
200	Rivets	1							
200	Rivets	1							
200	Felt Washers				1/8				
		8/8							

Floor Space Shop.		23,688
Foundry	50 X 50	2,500
Blacksmith	25 X 25	625
Plating pickling etc	20 X 32	640
Gun shop.	16 X 32	
Japan shop.	28 X 32	
Raw Stock	30 X 39	
Mare -	20 X 39	
Finished Stock	36 X 39	
Assembling	86 X 25	
Testing	25 X 25	
Office	25 X 215	
Packing	50 X 47	

	Battery Parts	Commercial	Oldbs.	Field Work	Portable Work	Signaling Work	Military Work	Cavalry Work	Special
800	Box Binding Posts	3/4							
800	" Post Nuts "	1/4							
1000 X	Tin Battery Cups								1
2000	Grid Silica				1/2				
16000	" Cutting				1				
2400	Copper Connections				1/2				
2000	Grid Springs				1/2				
400	Zinc Connection Strips				1/4				
2000	Large Zinc Guides								1
2000	Small " "								1
2000	Rubber Guide Pins	1							
1000	Screws			2-1					
2000	" Binding Posts	1							
2000	" " " Nuts	1							
		4							
					3				

3 Moz Slipjoint Punch -	1100
3 Rocker " "	150
Screwplate -	
Vises - 50 -	250
3. Anvil	20
5 Tool grinder	500
Polishing Spindles -	200
100 " Wheels -	400
1 Drop Hammer	100
Screwplate Holder	125
	2870
	3065
	335-25
8 Hand taps -	
2 power taps Mac	160
Spreadspring Winder	50
Wire Cutter -	25 -
Tweezers -	2500.
1 Type Metal furnace.	150.
Japan Oven + stove	500
2 Polishing Mandrels - gate -	50
4 Nickel Pots with handles	300
1 gold Pot.	100
3 Dropping Pots	100
1 Sawdust Pot.	25
One Pickling Pot	50
3. Brass furnace holes	105
1 annealing furnace	20
1 Cupel Handling furnace	20
1 Foundry Ladle	80
Wax Tank stand + piping	300
200 Mandrels - Sandusky Foundry 100,	750
30 outside trimmers	300
40 Inside "	400
Governor weight - 2 mandrels - gate -	15 -
5 Hand Tapered Leather Washers -	25 -
1 power circular Shears -	2500 -
One Iron Melting Cupola	400
Set of Flasks for Brass	50
" " from rear compressor -	500
One plating Machine -	400

	Sunday
	Monday
	Tuesday
	Wednesday
	Thursday
	Friday
	Saturday
	Special

No. _____ 188

THOMAS A. EDISON,
40-42 WALL STREET, N. Y.

Foundry

Cupola
Sand
6 Brass furnaces
1 Type metal furnace
Scales
1 Blower
2 Tumbling barrels
Flasks.
Small tools
Pickling tubs

27 x 38
27 x 38
216
6
1296
8
1980
1400
27
54
216
81
1026
615,60
8-6
8
14

6
10000
10000
60
600000

1400 Water.
11.400

11400 Buck.
2700
38.400

45000 60
27.000 00

75
45,000

Steam and Water — Eng. Elec. Exhibit

1200
No. 2500 60/25 25

188

Mr. THOMAS A. EDISON, Dr.

40-42 WALL STREET, N. Y.

150 H.P. Brown Engine		2	200 00
Mason Work & setting up.			
2 72 H.W. 73 H.P. Boilers 1650.		3	100
Setting complete with flue		1	300
1 National Feedwater heater #11 250 [20]			200 00
1 Pump Worthington			200 00
1 Fire pump to be used as spare also 10x6,			450 00
~~Piping complete for Boilers pump &c~~			
1 Blower & Engine			
1 Tank for water on boiler house 9000 Gals			135
Piping for Steam & fire pipe			
Shafting		1	894 00
Stringers for Counter & Bolts & Cast. & Washers			130 01
200 pulleys.			
Benching Wood - 2 length 700 cord			
1848 Legs.			454 00
350 ft Bench in middle			60 00
613 ft running of partition 613 x 19 x 3/4 or 3 1/2			325 00
Steam heat & Boiler piping		1	360 00

21
90
1890
576
2466

66
576

Cupola complete 450.
Blower 100.
~~Elevator etc~~
Tumbling barrel. 100
all fittings up. 50
700

Floorspace

Shop. — 2		24 840
Foundry — 50×50		2 500
Blacksmith 25×25		625
Plating pickling 20×32		640
Tin shop. 16×32		512
Japan 28×32		896
Raw Stock 30×39		1170
Wax 20×39		780
Finish Stock 36×39		1404
Assembling 86×25		2150
Testing 25×25		625
Office 25×25		625
Packing 50×47		2350
		39117
Garage 86×25 / 64×25		1200
Tin shop 90×39 / 90×21 / 65×39 / 25×21		2464
		42781

90×21×25
39

Grocery, Medicine	Clothing	Dental Work	Musical Instr.	Printing Work	Publishing Work	Cleaning Work	Jewelry
17.50							
3.50							
14.00							
52.50							
542.50							
			48.50				
			1.40				
			47.10				
			4.85				
			679.00				
				459.16			
				63.60			
				521.00			
				214			
	7.50						
	12.50						
	140						
	8.50						
	5.40						
	13.90						
	42.50						
	459.00						

200.57
1000

505 ft shafting

20 ft. 5. 6000 240 1.90 28.00 6790 750.00
485 ft 2½"
6 Hangers 3 20° dip. 100. 688 6090
54 " 2½
31 Couplings 542.
1 Pulley 36 X 18 X 3" 46.
2 " 40 X 10 X 3 64

200 Assorted pulleys 1000
Average 12 X 6 X 2½ 1652
58%

825.00
1891

Shafting

20 at 6 120
485 at 3. 921
1041
760

1.90
485
950
1520
760
921.50

196
25
680
272
5400

16
21
16
329
345
690
6 90
241.50

345

400'
N 89° 22' 11" W
N 89° 22' 11" W
400'
N 0° 37' 49" E
400'
S 89° 22' 11" E
400'
S 0° 37' 49" W
400'

20 Screw [illegible] 475 — 8000 —

Floor space [illegible]

10 [illegible] 32 11/16" 32"

8 Universal [illegible] — 410 Each 13 1/2" — 3200

12 Lathe [illegible] Each [illegible] 650 — 2600

16 - Precision Special [illegible] — 1450

6 Royal [illegible] Reed - [illegible] — 650 -

3 Hardy Shapers - 840

10 Milling [illegible] (108 Brown) - 3000 -

1 Stiles [illegible] 10 inches — gasket [illegible] —

1 [illegible] Fort Ke 600

2 Universal Mills B75 - 1200

1 Semi Steel 475

2 Precision Lathes Full — 700

15 Speed Lathes Each Steel — 850

1 Cutter grinder B75 - 260 -

2 Rapid Engine Lathes Each 1450 - 2950

16 - 9-4" 5-14" 2-32" Drilling machines — 3575 -

8 - Special Screw machines for Covers — Each 250 — 2000 -

2000

22650

8000

30 30,000

gas piping with pipe ~~length~~ Size.
Length including gas meter
Stools for boyer mandrel ——— 100

~~Boring & Fitting all Countershafts & Mandrels~~

Belting for 200 machines · 2½ 840-
4150 ft
4300 ft · 1⅜ · 675-

Main belt ——— ~~2 25~~
Big Cross belt ——— 175-

Countershaft Wood handles — 50

~~Putting up shafting with pulley hangs —~~
Putting up 200 Countershafts & Belts etc 125-
Putting up 18 Pressure Countershafts . 50
Putting in Cupola — 100
Straight air machine — putting in position 200
Wiring Bldg for Lights — Sockets, Cords, Shades
Lamps — Electrics — Cost material — 1200
Ventilating Chimneys for acid room 50
2 Mercadapes — 100
Cesspool for water closets + piping 100
Water pipe in street to Garden + Bldg — 150
~~Water pipe in Bldg — fire hose, Sprinkler~~ 200
~~Compressed air pipe for sanding~~
3 Small Root Blowers — for Sanding 45-
~~Electricity~~

Steam pipe

2 5" elbows.		5 60
2 5" Gate Valves	27	54
2 5" pipes 2ft long.		4 40
1 5 X 5 X 8" T		18 00
40 ft 8" pipe steam		110 00
1 8" Gate Valve	50	50 00
1 8X8X4 T		15 00
1 8" Exhaust Spiral 58ft 3 elbow.		134 00
T nozzle + 20ft Bell + flange		22
		10
Putting up. 2 men 1 week + all pipes cut at McNab + Th.		423 00

Steam heat 11664 feet 1" pipe 1108 00

180 6 pipe hangers. 40 72 00

~~Pump~~

12 Heaters. 110 1 13 00

6 2½ Valves 6 1" Valves. 250 1850 111 00

72 ft. 2 - work elbows + Tees. 75 00

1379 00

1379 -
423
1802

Putting up. — 60 900.00
200 about 260 00
Extras 200 00
1360 00

	Motor Parts	Screw Head	Ex Nuts	Ball Brass	Pat Leather	Steering Wheels	Rubber Mat	Emery Cloth	Steering
400	Brush holder nuts	1/2							
400	Switch Plungers	1/4							
200	" Handles	1/4							
400	Brush-holders				1/2				
800	" Rivets	1/4							
600	Commutators				XX				
200	Commutator Wheel Rubber	1							
2000	Irons for Commutator						1 Sheet		1 Sheet
		76 1/2							
					1/2		1		

Motor — Parts

		Screw Mach.	Lathe	Arm Press	Lund Press	Cunningham	Milling Mach	Emery Wheel	Special
500	Shaft for motor	8							
1600	magnet Cole	10							
400	Motor Shafts	1				8			
400	Commutator Shell	1					1		
400	Commutator Wheels	1/2		1/2 - 1					
400	Bed plate								
400	Bottom Frames			2 - 4					
800	Stampings Armature			1 - 3					
400	Balance wheels			2 - 1					2 M
800	Heel pieces			2 - 4			4		2 M
1600	Pole Extensions			4 - 4			10		
2000	Wire armatures			2 - 4			4		
3200	magnet Hand Fibres				1/4				
400	agate Bushing	1/0							
400	Spiderweb Base								2 M
400	" Stud	1/2							
400	" Platinoid Nuts	1/2							
400	" adjusting screws	1/2							
400	Governor Spring	1/2							
1800	Cyfer Brushes				1				
400	Platinum wire Ends						1/2		
200	Hubs for Gov Disc						1/2		
400	" " Brush Holder						1/2		
400	Resistance Spool	1/3							
400	Spring Steel	1/2							
400	" " Nuts	1/2							
200	" " Washers				1/4				
400	" " Knuckles								1 HP
400	Motor Shaft Center	1/4							
~~400~~	~~Return Loop~~ "	~~1/2~~							
400	Rubber Block Switch			1/2 - 4					
400	Switch Contact Points								
800	Bushing for Nuts	1/2							
400	" "	1/2							
400	Brush Shaft Studs								
					1 1/2	8	20 1/2		

New Model..

1 200 threads. OK 150 would work better

2 New jig back. OK #

3 Clamp for listening to prevent moving or a lock. - Fasten Tube to Motor Case permanently but so it can be taken out easily -

4 25/1000 recorder knife: 20/1000 ball. OK

5 An adjustment on talking end abutment. not necessary as we have now OK

6 Engaging device for tracking. OK

7 Improved shaving knife, and method of operating.

8 Swing arm in place of nut for adjusting governor to get quick turning off. Better Lever governor and shoelet

9 New diaphragm with tension spring. will look OK.

10 Lead screw nut - copper sheets and adjustable. OK

11 Fix governor to run at 65 rev. easily.

12 " " " " water and treadle governrs.

13 limiter to stop cutting cylinder. Ball should be thin

14 Stop pin for starting lever on motor machine is too small. Hard Rubber Case

15 Diaph. arm, when raised, is liable to drop, if the machine is jarred. New Shaving Knife goes back further to rear

16 Armature should be supported on something besides wood: wood

will warp out of shape.

17 The turning off knife is liable to drop down and spoil the cylinder, when the diaph. arm is lowered.

18 There is not distance enough betwwen the back rod "lugs" to allow the recorder knife to travel from end to end of the brass cylinder on the main shaft,

19 The wax cylinders are liable to damage when removing them from the machine by striking against the frame, when the lock bolt for the swinging arm is attached to the frame.

Some way to tighten the gov. belt when it becomes slack from use.

21 Removable brass shell to permit use of regular or mailing cylinder, and devices on diaphm. arm.

22 Better belting and belt wheels.

23 Lengthen wax cylinder as far as possible.

24 If possible shaving off tool should shave off cylinder, but recording and reproducing points should never go off cylinder so as to prevent necessity of bevelled edges.

25 More room at end of back rod, so wax wont jam up and hurt feed nut

26 A softer and better commutator brush for motor.

27 Better method of securing contact points on switch for stopping and starting motor.

28 Better arrangement for oiling and holding oil on centers of main screw.

29 Some device for preventing the listening tube from moving dia. arm when up. Shaft governor as low down and cast to recess with a rounded smooth shoulder work.

30 Better adjustment of rubber that carries brushes for motor commutator.

31 Mailing cylinder must go way up on shaft, so talking turning etc takes place on both cylinders same point.

32 New recorder same as for talking rings on new toy to be used - modified for 200 thread. No 9

33 Place the armature to give clearance between the armature block sleeve and the armature shaft bushings.

34 Some kind of insulation between the bars of the commutator that will not be affected by the atmosphere and cause the commutator to run out of true after being finished. - Hard fibre and asbestos [illegible]

35 Make the straight edge 1/8" wider in order to get a dowel pin in each end.

36 Make fewer spaces on the armaturein order to give more room in each space for the wire. See Kenneth

37 ~~Can pattern for magnet have a recess in the centre on the lower side.~~ ~~How much more~~ [illegible]

38 Have all patterns, as far as possible, made without ribs, and with plain surfaces, to facilitate casting, cleaning, japanning and working generally.

39 Why not have a coarse pitch screw and put it inside of the back rod, then connect ~~by a combination of~~ worm on the governor shaft and worm wheels on the main shaft and screw inside of back rod to dispense with belting? - - -

(39) If this is done the screw will not be liable to injury, the machine would be much shorter, the main shaft stiffer and more easily made. See answer 38

Doubt 40 If possible have reproducer track without adjusting. see 8

41 Water motor regulator will not control the machine with the variations in pressure which take place in ordinary usage. Experiment

42 A " union" should be used in place of a coupling on the inlet and outlet pipes, on the water motor machine.

43 Get the handle of the inlet cock on the front of the water motor machine.

44 Base screws for the gov. block to be 1/16" further from the edge of the block to prevent the wood from breaking out when the blocks are drilled. OK

45 Twin nut spring should not be slotted on back end. with new Copperclad nut Single spring only necessary OK

46 Water Filter to work well on 25 ft fall.

47 Main shaft support bearing to be open at the top. with Latch OK

48. A Latch that swings to prevent main shaft dropping down or a better shoulder left on shaft— shoulder on shaft would answer short as we could make this or working [illegible] OK

49 Square slot milled in governor balls for spring

50 OK Collar forced on governor shaft at top to hold springs & limiting collar with guide pin on shaft.

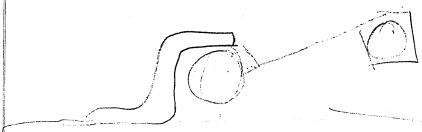
51. Guard for main screw

for at angle

Hard rubber block in place of wood to support governor frame,

Recommended for finishes to be used on these [illegible] may be [illegible] brushes.

Drafsman made a fixture



Cuts on a strip and starts with

Spring that put off lever in governor

Lever to hold out for lightening bolt

for phone

for [illegible]

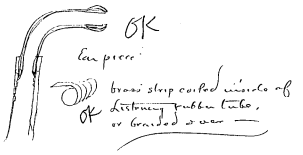
Phonograph

Caveat —

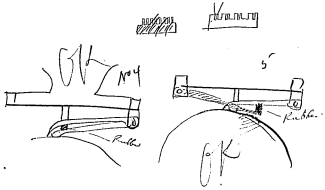
I have been and am now engaged in experimenting on phonographic devices connected therewith, and processes of duplicating phonograms —

The following devices and methods I wish described and illustrated very briefly

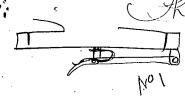
Offenbury tube. square wire, or band to be close together, glass ear pieces,



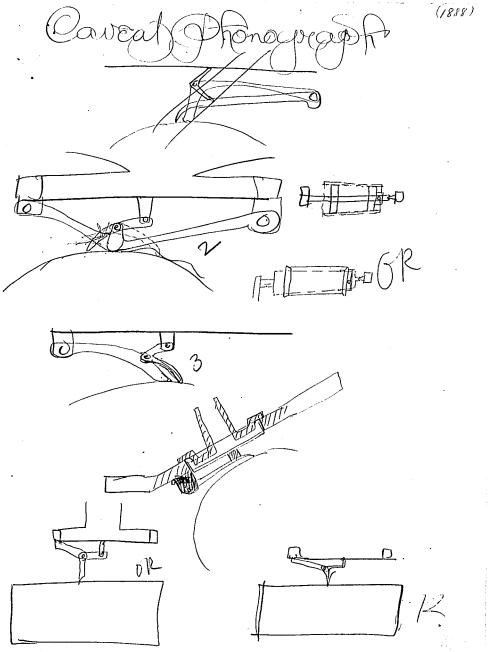
A grooved bar threaded each through cylindrical magnets of Lead + Magnesium or various Fusible steels made from the fully dried salts to be used like iron filings; also thin strips dipped in form of a cylinder + turned down + shaved over grooved cylinder.



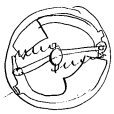
Monograph Carcel

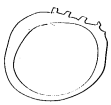


No 1

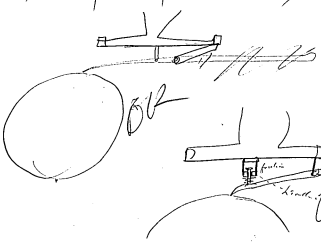

Caveat Phonograph
(1888)
2
GR
3
DR
K

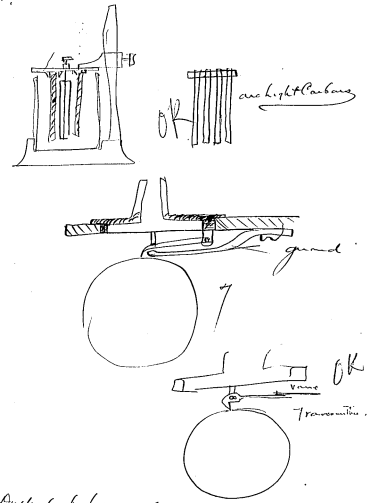
Concert plough



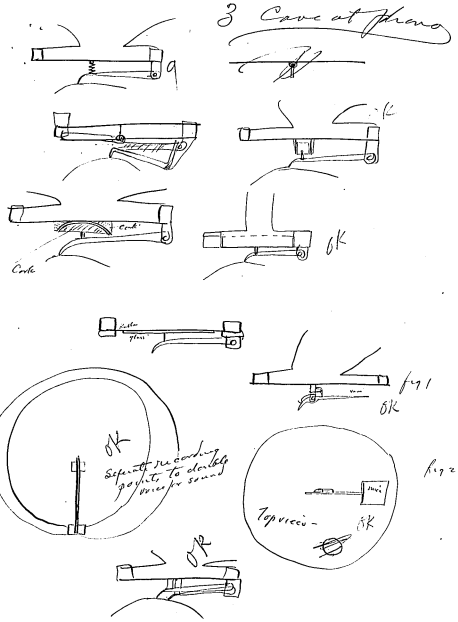


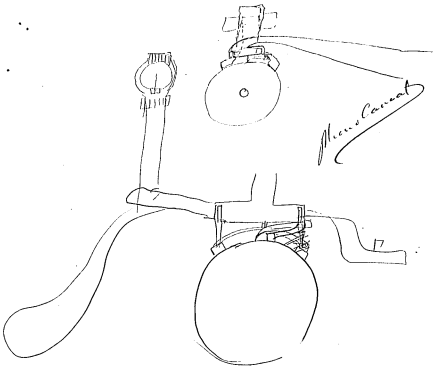
Compressed powder — Moulded compressed powder; Amorphous Hydrocarbon dry powder; Graphite — Sapphire Cutting Recording point, Diamond, Ruby, Emery Corundum, Osmium Iridium





Duplicating by having one
phonograph talk to another original one
made on ~~Edison~~ National Cobinet at work
being heard but record by safety by hearing

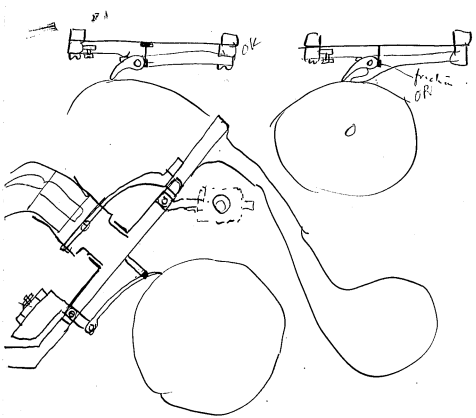

3 Cave at Hrano
9
OK
Circle
Circle
OK
fig 1
OK
OK
Separate recording
points to develop
image sensor
fig 2
Top view
OK
OK



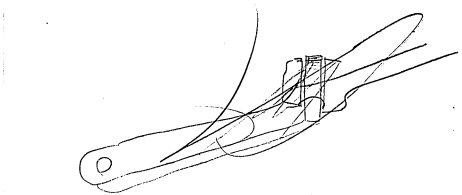
System of Commercial Telephony
Recording on phonograph. This works Carbon button
on long distance & Records on piano at other end
Cylinder delivered just like a song —

Taking Speeches by one funnel - two tubes & Valve
& 2 phonographs — or two diverging funnels —

Recording with point .0025" & going over Cylinder
3 times =

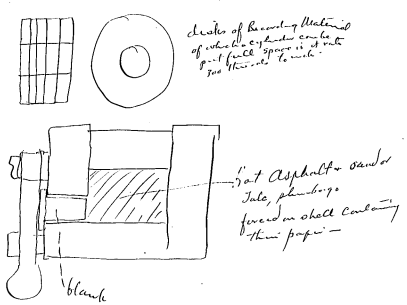


for continuous repeating
through 2 planes at angle
so it will drop back make feed screw work
Spectacle arm up on under at end post a Ratchet.
wheeled rail works a trip a bar feed arm out a
plane spec. slides back dark pot-hook device prevent jar



Cylinders for recording Composed of
Compressed powders with Sythin powder
Recording & reproducing tools –

Talc . Talc and Castor Oil Talc and Linseed oil
Talc and a wax Talc & Oleate of lead or other Oleate
Talc & Castor oil treated after pressing with
Hypnotic acid ~~Kaolin~~ in place of ~~talc~~
Talc, plumbago – Naphthalin, Kaolin, pine
Common clay – Alumina from alum
Compressed Amorphous Hydrocarbons
Keatones, Aldehydes; Alcohols mixed with
the above; glycerine + other non volatile viscous
substances; glucose; Molasses Honey;
Camphor balsam – Dry powders pressed
by Hydraulic press –
Cylinders pressed of Kaolin or similar material
& dipped in hot wax. perfume Amorphous
Hydrocarbons; Fatty acid Salt of metal or
~~talc~~ Organic bases – Kaolin or other non
Cutting ~~talc~~ mixed with Tallow Japan wax ~~Castor~~


sheaves of bearing material
of wheel cylinder center
and fixed spring at right
for thrust to wall
flat Asphaltor sander
tube, plumbago
forced in shaft casing
thin paper
blank
self adjusting

Section no. 1 1625

THOMAS A. EDISON,
Central Station, Construction Dep't,
No. 65 FIFTH AVENUE,
NEW YORK.

(1588) Form M.
W. D. RICH,
SUP'T OF CONSTRUCTION.

....., 188

Address reply to.....

Experiments—

Malleable iron a phonograph magnet & see how much less wire you can use

---

Water apparatus for Beckstevens
1 Section instead of four for about
1 ton a day 100 amps for 110 Volt
Current

Perhaps we must put a condenser
in the big magnet of Mallory's but
better shell pour full of Kerosene.
Consult Crane

Wills phonograph permission to Phonograph
Make no charge to Phono Co

THOMAS A. EDISON,
Central Station, Construction Dep't,
No. 65 FIFTH AVENUE.
NEW YORK.

Form M.
W. D. RICH,
SUP'T OF CONSTRUCTION.

....., 188

Address reply to .....

Rock drill
Small Continuous dynamo for all field
Alternating armature for driving the head
Head about 1/10 H.P. of 600 alternations or
1200 flows.

Motor for Car brake.

Make magnet of two pieces
Armature made of plates malleable.
Whole apparatus not more than 50 lbs. weight
Motor must put on brake & lock passing free
release by reversing armature & letting
brake run back

Form M.

THOMAS A. EDISON,
Central Station, Construction Dep't,
No. 65 FIFTH AVENUE.
NEW YORK.

W. D. RICH.
SUP'T OF CONSTRUCTION.

....., 188

Address reply to.....

Royalty 10% per cent -

This battery is 25% more efficient than any other battery & is 92% of the theoretical efficiency of the Zinc

Get list of all telephone exchanges

See Brown about Quotation coal batteries

Leave the matter of the contract with Mr Gilliland

216 & 264
216

THOMAS A. EDISON,
Central Station, Construction Dep't,
No. 65 FIFTH AVENUE,
NEW YORK.

Form M.
W. D. RICH,
SUP'T OF CONSTRUCTION

....., 188

Address reply to.....

Get estimate on brick & wood for
wood working Shops.

Make plan (ground) & property &
put on Central Station & Shops
showing

SKETCH of motion pattern (motion pattern?) (6888)

actual size of original roll —

Rolls down to .008 - 7 inches long
300 movements will do it —
X is the solid mounting plate
That moves up and down 300 times
from ⅛ to .008 —

Was a movement of 3 inches —

Steel or Brass —

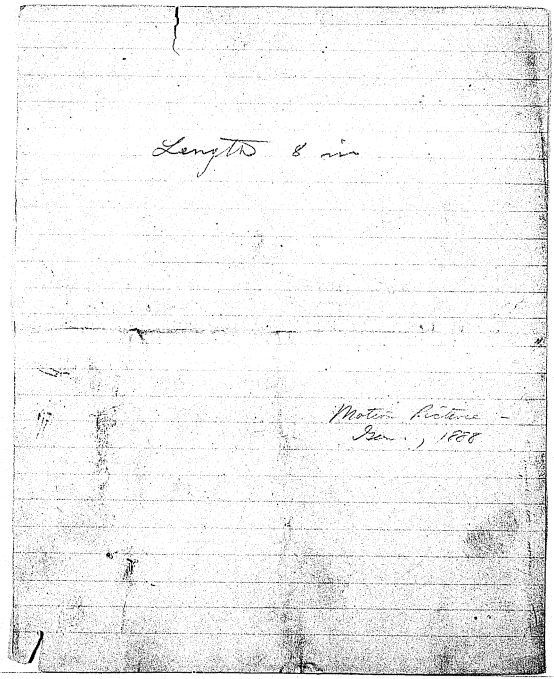
10 inches long

2 inches thick polished steel or brass —

Cam

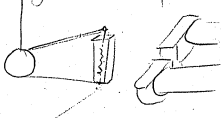
Belt

worm arranged so that a shaft goes 300 times to the movement of worm and X from ⅛ inch to .008 space between the working plate P & X


Length 8 min
Motion Picture
Jan., 1888

Kramer 1/4

Try following.



Hard rubber — or glass —
filled with. Benzol — Turpentine
Sul acid — ammonia —
Oleic acid — Conc Chloride Z,
Conc Potassia — Solid Paraffin,
Conc HCl — with exception of
also cases of different metals.

Cable Address "Edison, New York"

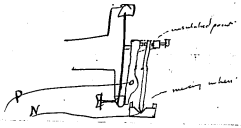
From the Laboratory
of
Thomas A. Edison.

Fulpoot, Orange, N.J.

Wire for Law pa— get some 20/000 Silver wire —
fuse silver wire with flow Tube + then put in Lamp and squeeze =
also Try put wire in Irregular way with a cool flame
dip silver wire in acetate of aluminum, Manganese, Lime to
keep it from fusing where flame strikes — pyro with silver wire
proving to use —
If silver fail to fuse with glass fold platinum
fold with — or use Aluminum-Bronze of platinum heat brush
Something that will alloy with silver Oxide + then burn off —
dip in Alkali soda dry + then seal in =
Try 40/000 wire silver if 20/000 fuses — put silver wire in
way with cold flame squeeze then put asbestos over, propel
wire + remelt squeezed part + resqueeze — platin Nickel + iron
wire with silver, burn off + seal in — Make some pure iron + shape
silver with. Try Tinned Nickel wire also Tinned Iron
wire — also nickel wire Coated with Lead Iron wire dette
also Fe + Ni wire coated with Bismuth, — Ni wire
Coated with fused Litharge — Try iron + Ni alone + manipulate
To stop oxidation Try using preparations —
Ask help for a grad[illegible]

Sketches Notes

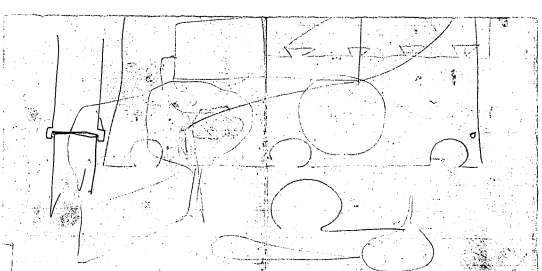
The adjustment on the platinum point
breaker wheel is a very poor one; How can a
man make a fine arc with loose nuts count
you fix this up some other way.
Also I want another one made thus



Notes

See Compt Rendu Aug 21 1871
paper & note by Friedel on
depositing Silicon & Carbon used
for Electric Light & Electrodes

My dream of Lab the magnesium
spiral in close tube in
Hg VESSEL heat with Current
like exhaust vacuo —



Cable Address "Edison, Nice York"

From the Laboratory
of
Thomas A. Edison.

Subject: _____ Orange, N.J. _____

John Ott

Make [illegible]
for new Exp[illegible]
Also Engrg
Regulator
with silv[illegible] Nickel tube
for [illegible]
Gos Trap [illegible]
glass [illegible] observe [illegible]
Also do [illegible]
do tinned— do silver plated
good glass, — Try silver wire in
Thin Capillary — tubes carefully fused
on + then put on a squeezer—

order - 3 gross. 1/2 8 glass Capd bottle for holding
liquids to find solvents — and 3 gross 1/4 8 glass
Capd bottles to hold substances to dissolve —
Make Rack to hold 200 made 1 1/4 wide 5 inch long
least tubes for dips — [illegible] single
Try Challenge [illegible] transparent sheet + Put film from it
getting — and for Fernet Callum + Lucas celluloid pencil
thus can be made perfectly transparent screens for
other purposes + if brittle can be made flexible by
a non volatile oil or glycerine — ask John if
Squirrel hair from tail can be found up + get collodion
in [illegible] form of very liquid solvents, over —

304 Flask

~~Camphoric acid~~ : all the Ethers

Creosote

Formals of methyl.

Ethylcumene

Tetrylcumene

Deppels oil.

Amylcumene

Phenylcumene

Cyanide of Ethyl (accelerates germ)

" " of methyl.

~~Nitro benzol (Mirbane)~~

Nitrite Amyl.

~~Caprylic alcohol~~

Cuminal

Tetryl

Wood Spirit. alcohol

Phenylic alcohol

Bergmot oil.

Pyridine

Picoline

Lutidine

Collidine.

Butyric acid

oil Copaiba

oil Juniper

oil Thyme

Camphol.

Camphorone

oil Caoutchoue

Caproic acid.

Caprinitil.

Cardamom seed oil

oil Caraway

Cenylic aldehyd

Chloral.

Cinnamene.

oil Cassia

oil Cubebs

oil Citronella

oil Cloves.

" Rosemary

Cyanide Ammonium

Cyanide Ethyl

Furfural

Piperidine

Propionitrile

Allyl alcohol

Dip — Uranine

pyrol Red — Fluorescene

Thallene

Pseudouvaritine

Alloxan

Murexide

Cable Address "Edison, New York"

From the Laboratory of Thomas A. Edison

Subjects _____ 2 Yrs - Orange, N.J. _____

flash

acetic aldehyde

Propionic "

Butyric "

Benzoic

Oil Garlic

Allyl Cyanide

Oil Calmus

Hydrocarbyl - or fusil oil.

Hydride amyl.

Amylic Ether

Hydride of amylene or amylene Pyrrol

Anisol.

Pyrrol.

Drop -

Anchusin dye Ether

Nitranisic acid

Comenic or Meconic acid -

Cyclamin

Gentianic acid

Glycosine -

Liquorice Extract.

Hydroquinone

Common Indigo

Sulphondigotic

Leguminin

Litmus

Melanic acid

Melone

Muric acid

Pectic acid

Picrotoxin

Purpurin

Alizarin

Pyrrol Red

Veratrin

Visgin

Drop

Umbelliferone

Naphthalene-dicarboxylic acid

Anthraflavic acid

over

flash

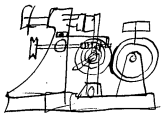
~~Acalon Tri (methyl-p-Cyan-di) red~~ -

Isopropylamine

Dep

Oxyuvitic acid

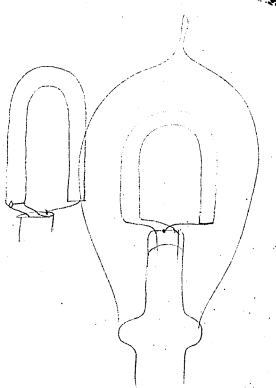
Tetrachloralizarin

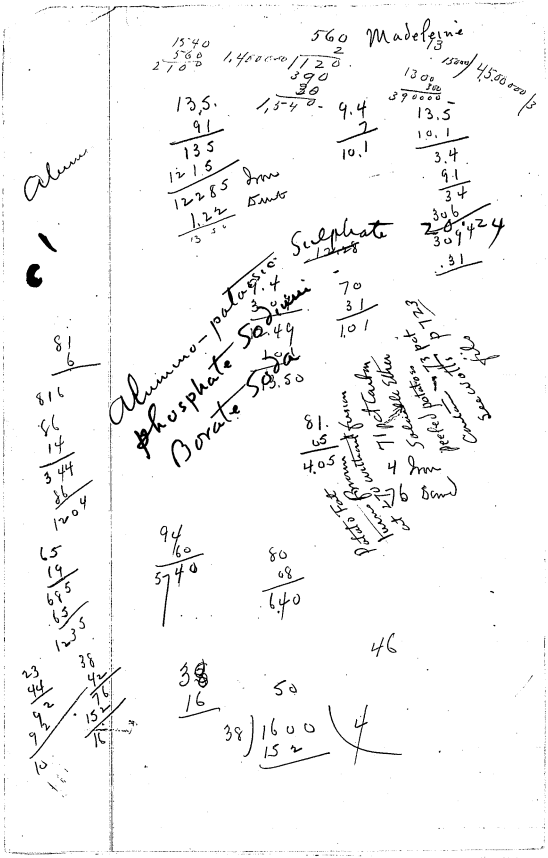


Zinc
deposit ~~Silver~~ — Then
~~Zinc~~ plate Zinc
Then dissolve Wax
& plate internally
with Silver & back with
Copper or Lead —
Then dissolve Zinc off by
Sulphuric acid —
which leaves Silver
This is then mounted as a
Recording Tool &
pressed on the Cylinder

Potteries + Styrene.

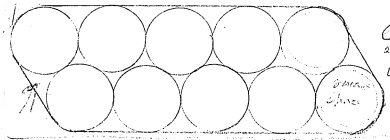
Would you please send a gls of the ~~mould~~ mod enclosed you



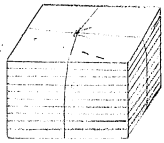

560 Madeleine
Sulphate
Aluminum-potassium
Phosphate
Borate
Aluminum
Potassium Aluminum Sulfate
Ammonium Aluminum Sulfate
Sodium Aluminum Sulfate
Dried Potassium Alum
Ammonium Alum
Soda Alum
Potash Alum

81 total weight - gram

18
9
9 | 18
2
4.05
18
5
4.05
gram
96 dust
30.36
27.6
33
18
9.3
24.3
6.27
3
.18
.65
4.05
6.48
52.65
135
1.001
.49
13
9.4
3.41
.7
101
135
13
135
121.5
122.85
31.59
.34
12.28 gram
1.22 dust
1350
9.4
3.41
12.81
93
1259
.07
.7
135
1.001
.49
13
9.4
3.41
.7
101
135
13
135
121.5
122.85
31.59
.34
12.28 gram
1.22 dust
1350
9.4 - 7
.7
135
1.001
.49
13
9.4
3.41
.7
101
135
13
135
121.5
122.85
31.59
.34
12.28 gram
1.22 dust
1350

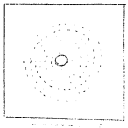


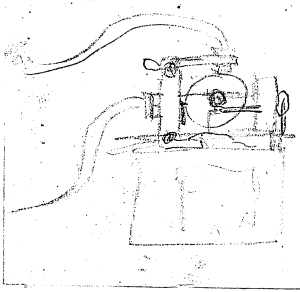
Ideal system for a minimal area(s) of Exposure to the light for an outfit

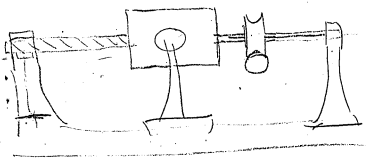


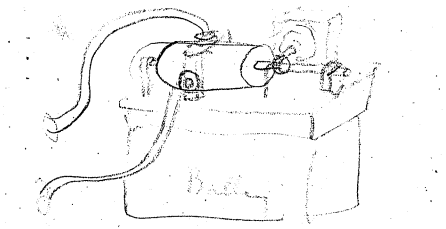
Top, side and end views of light proof box

"C"





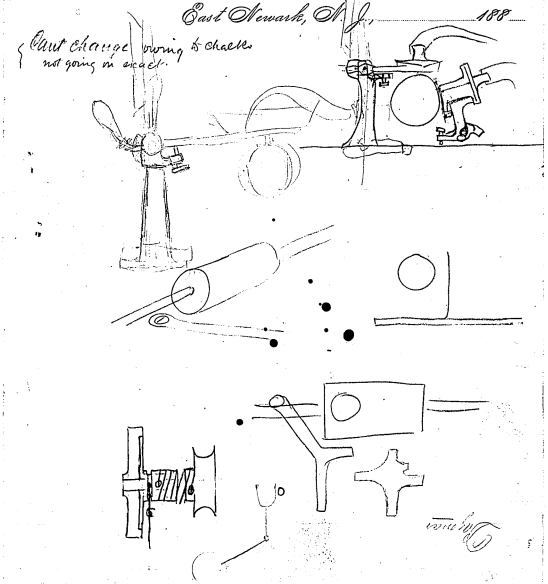




THE EDISON LAMP CO.,

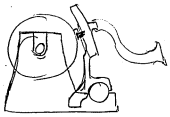
East Newark, N.J., 188

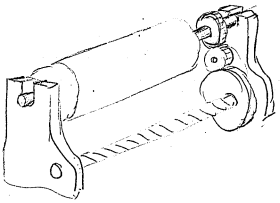
Chart change owing to chucks not going in exact.



THE EDISON LAMP CO.,

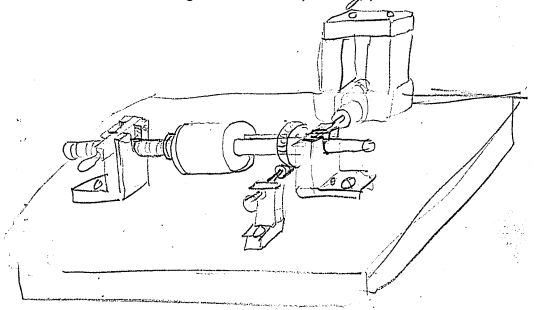
East Newark, N. J., ... *188*....





THE EDISON LAMP CO.,

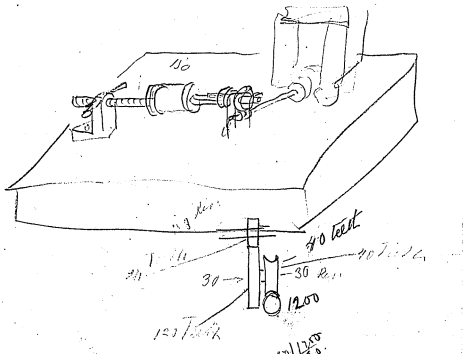
East Newark, N. J., ... 189..



Phonograph - Sketches (1887-88 ?)

THE EDISON LAMP CO.,

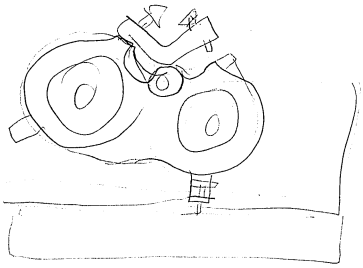
East Newark, N. J., ... 188...



Cable Address "Edison, New York"

From the Laboratory
of
Thomas A. Edison.

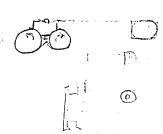
Orange, N.J. _____ 188

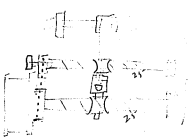


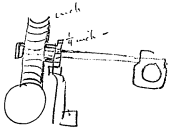
Cable Address "Edison, New York"

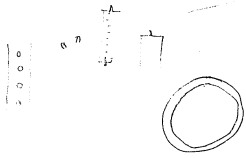
From the Laboratory
of
Thomas A. Edison.

Subject: _____ Orange, N.J. _____





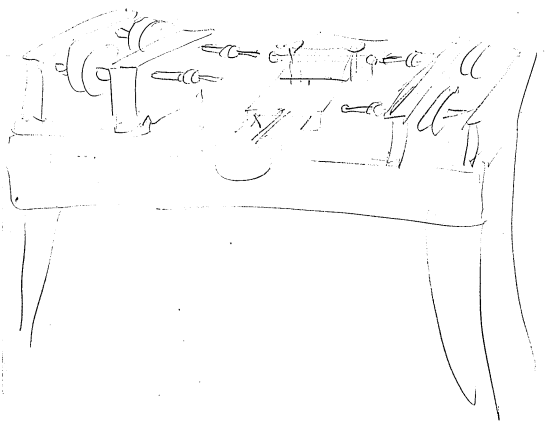




(Photo) 1888

#2 Bench dust reamer

for Centres



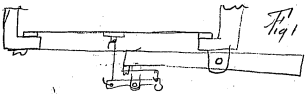


Fig 1

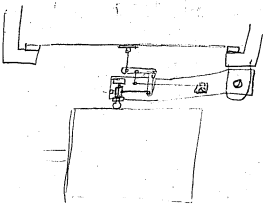


Fig 2.

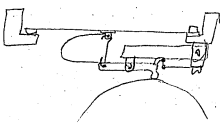


Fig 3

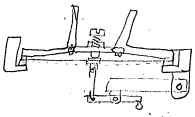


Fig 4.

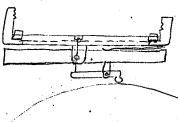


Fig 5.

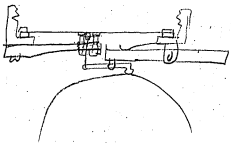


Fig 6

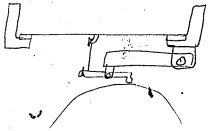


fig 7.

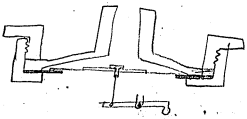


fig 10.

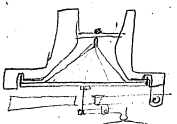


fig 8

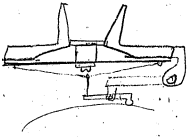


fig 11

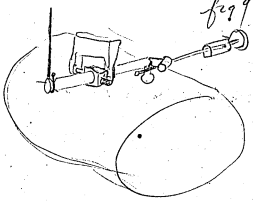


fig 9

Potash Soft - Bantmeal
Gum of Acacia P70 - water
Perhaps) 1.17 + phono
with IV 723

See if Wehmerohn got Phosphate of Titanium
gummy mass 8 soluble in H2O -

Phosphate Zirconium gummy translucent
mass remains so when dry Insol H2O -

See if there is a silver salt that will
dissolve in a Solution that will dissolve
wax - so it can be reduced on

Try this

may plate Cu on
wax directly
& Ex perhaps just
wax Phenol in
Normal -

Perhaps wax will reduce Silver Salt
direct - perhaps Red phos can be
mixed with Wax or Chloride Silver
stearic + then after inducting
Reduced to Silver as formed

Picrotoxin - decomp without
fusion + is below Saccharum
Substances p684 gd for a 17

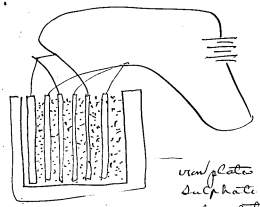
Pinipicrin gives dif comb Chemical
Piperic acid

The Drawing for the Car should be made at once you can send your draughtsman over to Orange St Car Stable about 6 o'clock from here & get all the measurements so he can design the apparatus to fit already ~~Exhibition~~ Existing Cars. Send it to me ~~exhibition~~ as soon as for patent application

Packet (Or have drawing of the angle brackets \ for mounting Motors. Bolts by which working rigging on Capstan shaft is to be secured on mounted brackets shown on the drawing of Each Car you Alter for Patent application —

Dixon—

Try alternately Charging & discharging a plate, also Charging one plate P other N & reversing the polarities rapidly.



view plates weak solution Sulphate Zinc or such solution as plate with proper Current,

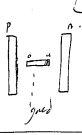
&

Theory

small plate seen—

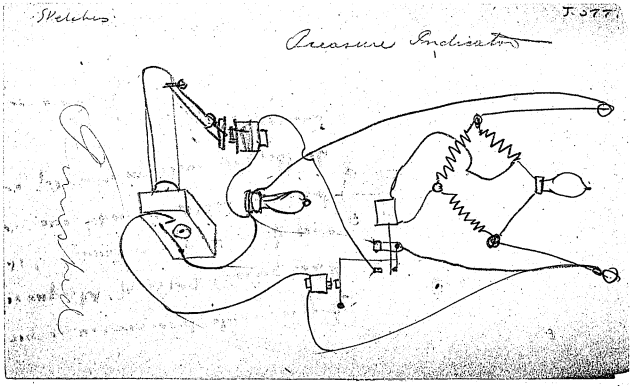
Triangle by drop of acid one inch thick

with a large vat a tin coiled to put in run 3 hours one side of Leads, gold particles mixed or plated with iron



iron wire placed on one end of P will also be plated — Then only occurs when plates are very close together & the liquid a very weak one for low resistance —

Pendulum & time to show pulsating positive electr—


S Welches
J. 577
Pressure Indicator